FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

January 17 to January 23, 2016 (Week 3)

Overall Summary

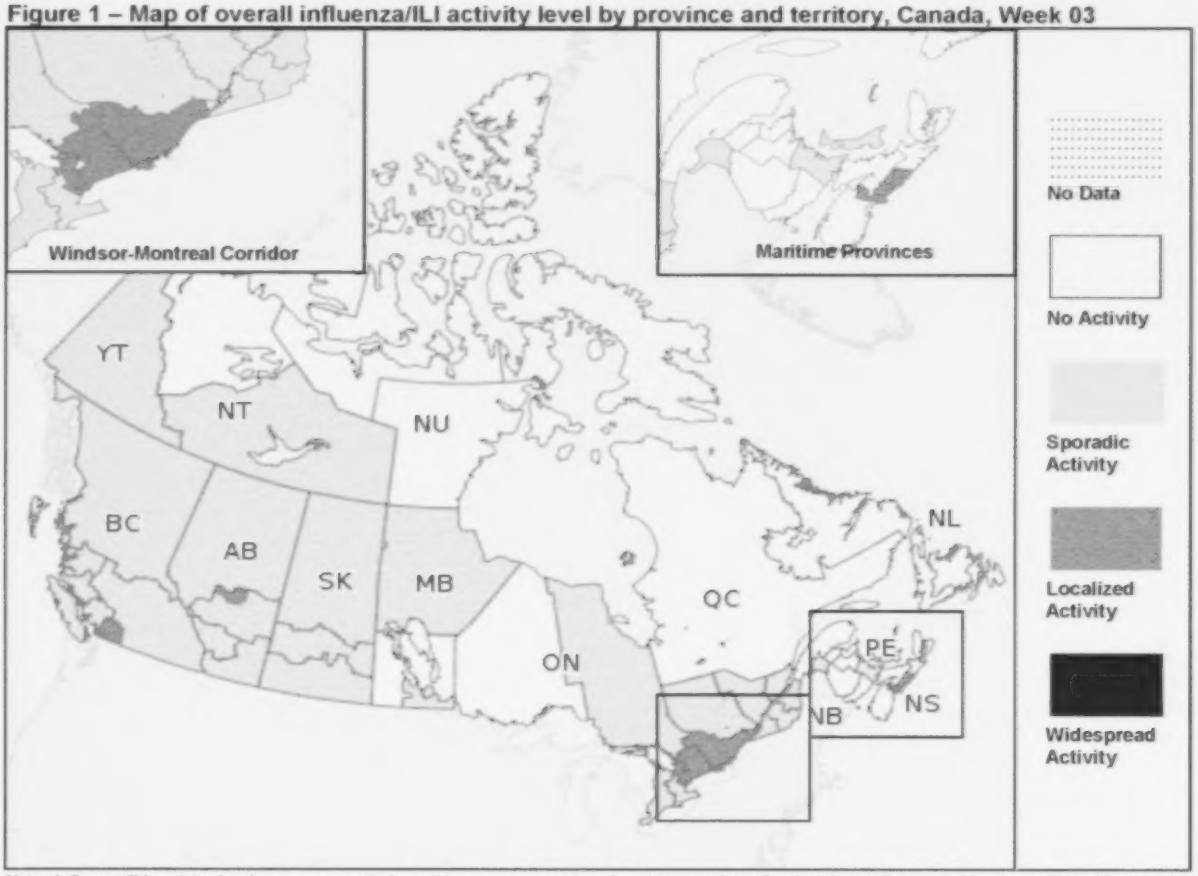
- Overall in week 03, seasonal influenza activity increased from the previous week but remains below expected levels for this time of the year.
- Hospitalizations among the pediatric population increased in week 03.
- Influenza A(H1N1) is the most common influenza subtype circulating in Canada.
- Influenza strains characterized by the National Microbiology Laboratory this season appear to be a good match to the World Health Organization's recommended vaccine strains.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 03, influenza/ILI activity increased in Canada. A total of 27 regions across Canada reported sporadic influenza/ILI activity. Localized activity was reported in six regions in Canada (one each in BC, AB and NS, and three in ON).

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 03

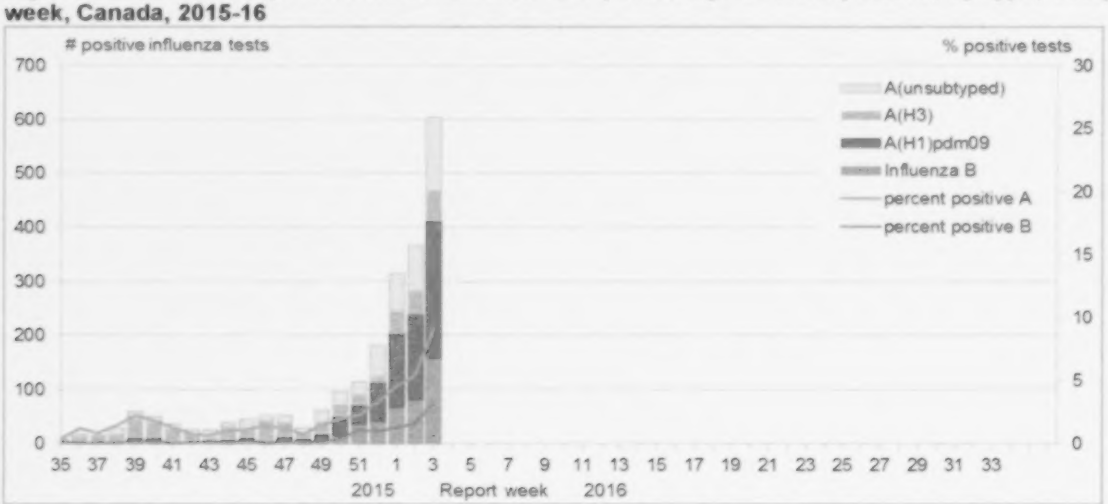


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

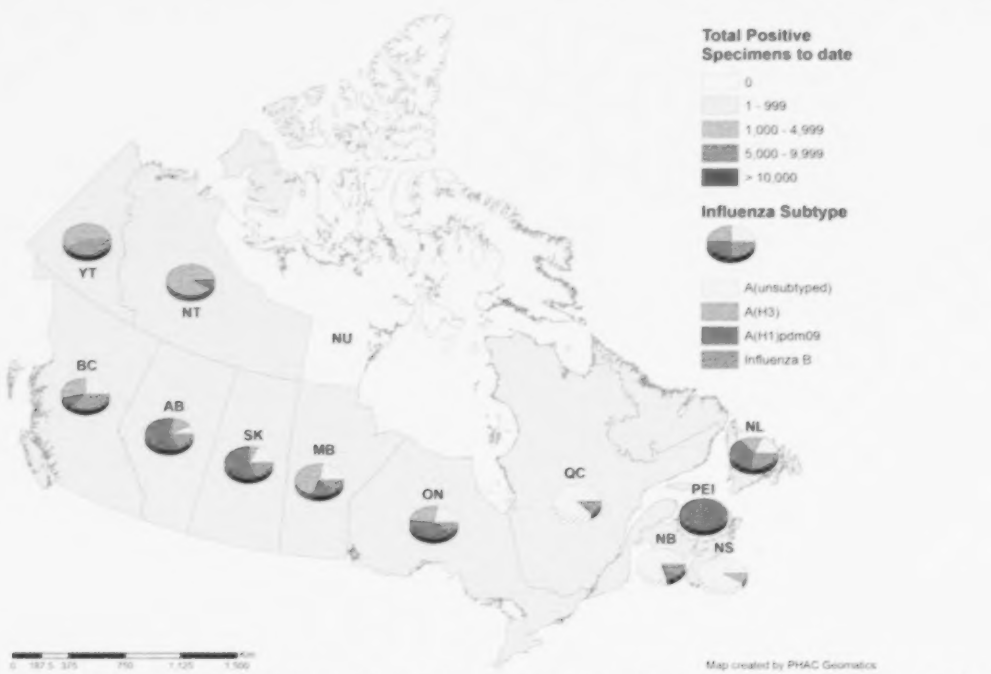
Laboratory confirmed influenza detections continue to increase steadily. The percent positive for influenza increased from 7.0% in week 02 to 12.4% in week 03 (Figure 2). Compared to the previous five seasons, the percent positive (12.4%) reported in week 03 was below the five year average for that week and below expected levels (range 13.2%-29.7%).

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



In week 03, there were 594 positive influenza tests reported. Influenza A(H1N1) was the most common subtype detected. The majority of influenza detections were reported from Western Canada, where BC and AB accounted for 69% of influenza detections in Canada in week 03. To date, 79% of influenza detections have been influenza A and among those subtyped, the majority have been influenza A(H1N1) [63% (744/1186)].

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16



Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 1,435 cases. Adults aged 65 years and older accounted for 27% of reported influenza cases (Table 1). Adults aged 65 years and older also represented 44% of reported A(H3N2) cases. Adults aged 20-44 years represented 26% of reported influenza A(H1N1) cases and 29% of reported influenza B cases.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Jan. 17, 2016 to Jan. 23, 2016)					Cumulative (August 30, 2015 to January 23, 2016)						
	Influenza A				B	Influenza A				B	Total Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	43	12	2	29	7	146	58	30	58	38	184	12.8%
5-19	21	5	1	15	44	107	30	45	32	115	222	15.5%
20-44	63	13	6	44	38	219	66	65	88	117	336	23.4%
45-64	33	5	2	26	13	230	61	89	80	68	298	20.8%
65+	28	3	8	17	11	316	31	180	105	71	387	27.0%
Unknown	1	1	0	0	0	7	5	2	0	1	8	0.6%
Total	189	39	19	131	113	1025	251	411	363	410	1435	100.0%
Percentage[2]	62.6%	20.6%	10.1%	69.3%	37.4%	71.4%	24.5%	40.1%	35.4%	28.6%		

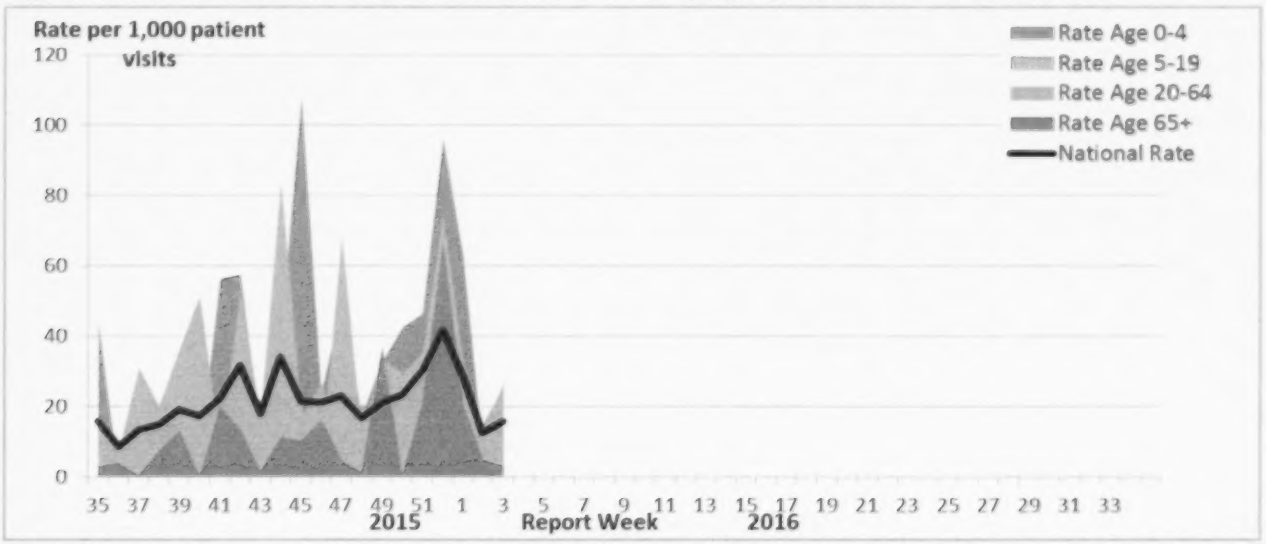
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate increased from the previous week from 12.5 per 1,000 patient visits in week 02, to 15.6 per 1,000 patient visits in week 03. In week 03, the highest ILI consultation rate was found in those 0-4 years of age (26.9 per 1,000) and the lowest was found in the ≥65 years age group (2.7 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16

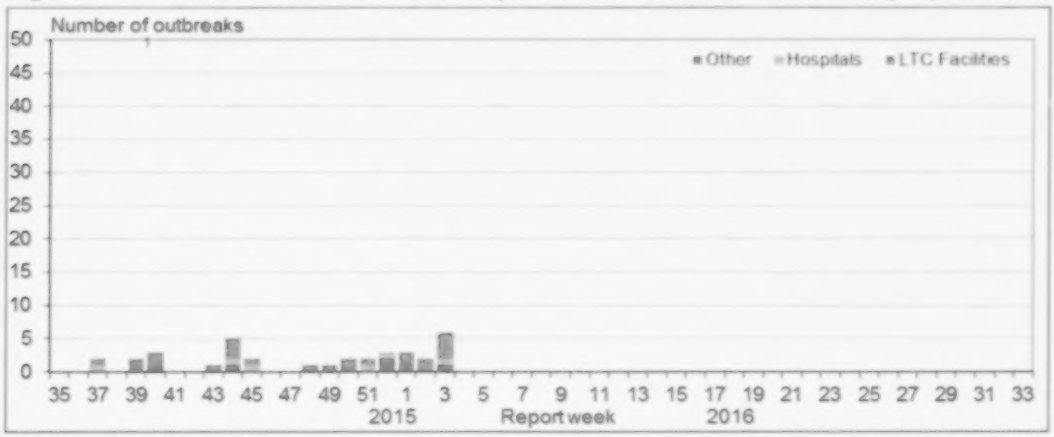


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 03, six new laboratory confirmed influenza outbreaks: four in long-term care facilities (LTCF), one in a hospital and one in an institutional or community setting. Two outbreaks were due to influenza B, one outbreak was due to influenza A (UnS) and the remainder were unknown. To date this season, 46 outbreaks have been reported (23 of which occurred in LTCFs). In comparison, at week 03 in the 2014-15 season, 941 outbreaks were reported (741 of which occurred in LTCFs) and in the 2013-14 season, 60 outbreaks were reported (33 of which occurred in LTCFs).

Figure 5 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths

In week 03, 24 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network (Figure 6). Nine hospitalizations were due to influenza A(H1N1) (38%), five were due to influenza B (21%) and the remainder were influenza A (UnS).

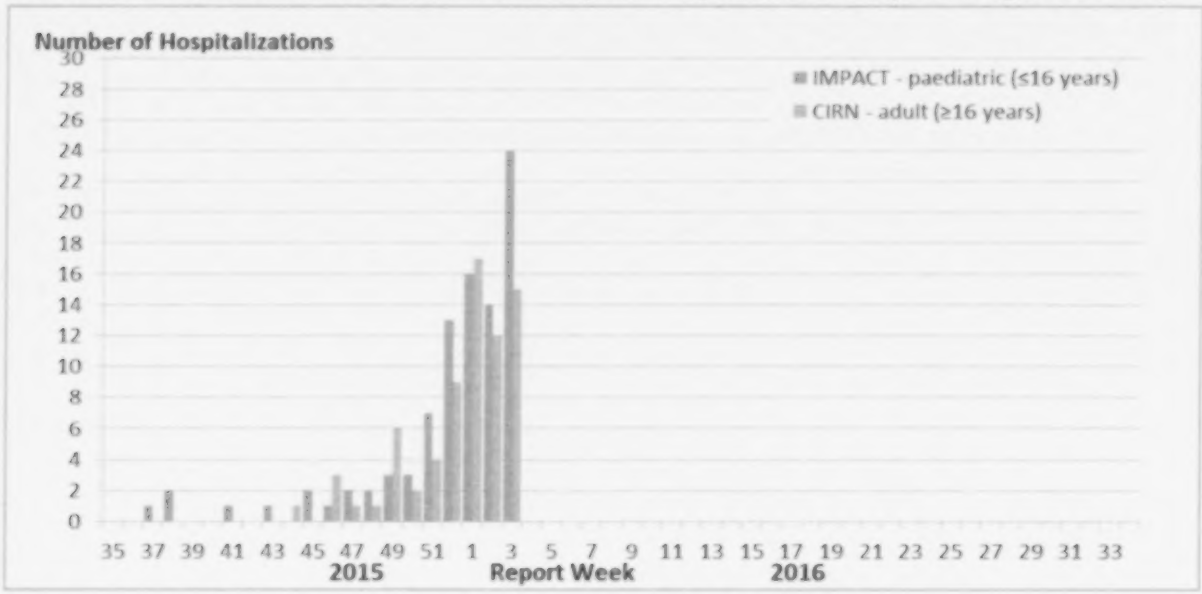
To date this season, 94 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network. Seventy-one hospitalized cases were due to influenza A and 23 cases were due to influenza B. The majority of hospitalized cases were among children aged 2-4 years (32%). To date, 13 intensive care unit (ICU) admissions have been reported. The majority of ICU admissions were reported in children 2-4 years (46%) and due to influenza A(H1N1) (38%). Less than five influenza-associated deaths have been reported.

Table 2 – Cumulative numbers of peadiatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16

Age Groups	Cumulative (30 August 2015 to 23 January 2016)				
	Influenza A				Influenza B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total
0-5m	11	<5	<5	7	5
6-23m	17	9	<5	x	<5
2-4y	24	10	2	12	6
5-9y	10	<5	0	x	6
10-16y	9	<5	<5	5	<5
Total	71	28	8	35	23

X- Suppressed to prevent residual disclosure

Figure 6 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, paediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)



*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

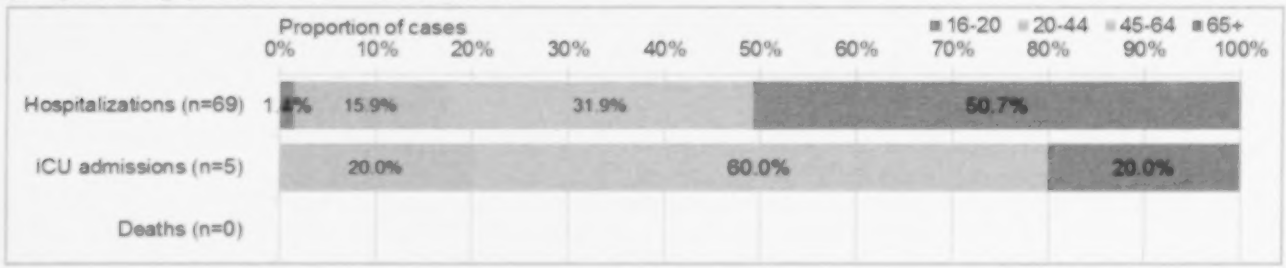
In week 03, 15 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS). The majority of hospitalizations were in adults 45-64 years of age (47%) and due to influenza A (73%).

To date this season, 71 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (77%) and were among adults ≥65 years of age (49%). Five intensive care unit (ICU) admissions have been reported and among those, four (80%) were due to influenza A. No deaths have been reported.

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by the CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (1 Nov. 2015 to 23 Jan. 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	1	1	0	0	0	1 (1%)
20-44	4	1	0	3	7	11 (15%)
45-64	17	3	2	12	5	22 (31%)
65+	32	2	12	18	3	35 (49%)
Unknown	1	0	0	1	1	2 (3%)
Total	55	7	14	34	16	71
%	77%	13%	25%	62%	23%	100%

Figure 7 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥16 year of age), CIRN-SOS, Canada 2015-16



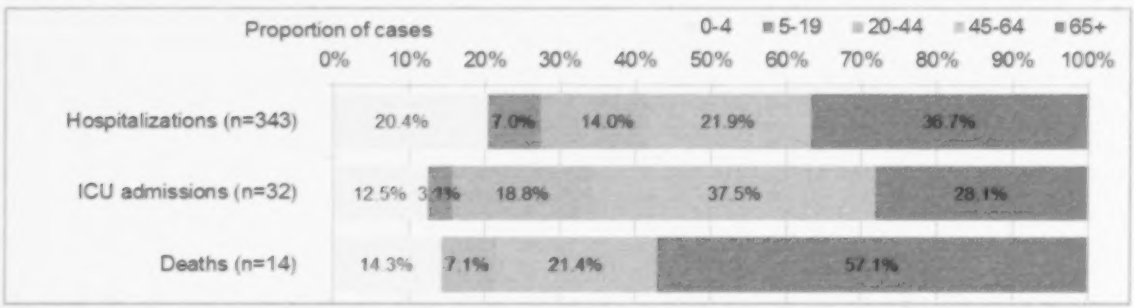
Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 03, 51 hospitalizations have been reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (86%) and reported in the 0-4 years age group (35%).

Since the start of the 2015-16 season, 343 laboratory-confirmed influenza-associated hospitalizations have been reported. Two hundred and ninety-nine hospitalizations (87%) were due to influenza A and 44 (13%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 69% (129/187) were influenza A(H1N1). The majority (37%) of hospitalized cases were ≥65 years of age. Thirty-two ICU admissions have been reported of which 26 (82%) were due to influenza A and 12 (38%) were in the 45-64 age group. A total of 14 deaths have been reported, all due to influenza A.

Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 234 influenza viruses [100 A(H3N2), 94 A(H1N1) and 40 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, twelve H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 88 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013.

A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): Ninety-four H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: Twenty-five influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. Fifteen influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an /Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.

The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 222 influenza viruses for resistance to oseltamivir and zanamivir. All viruses were sensitive to zanamivir and oseltamivir. A total of 161 influenza A viruses (99%) were resistant to amantadine.(Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	96	0	96	0	101	100 (99%)
A (H1N1)	85	0	85	0	61	61 (100%)
B	41	0	41	0	NA[1]	NA[1]
TOTAL	222	0	222	0	162	161

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported.

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Government of Canada Influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.